

# Work Order ID 142690

Monday, March 21, 2016 2:04:45 PM

**\*142690\***

Page 1

Item ID: D2947 Accept **\*N900040100\*** Setup Start **\*NS1\***  
 Revision ID: Stop **\*NS2\***  
 Item Name: Clamp  
 Start Date: 3/29/2016 Start Qty: 60.00 **\*60\*** Cust Item ID:  
 Required Date: 4/5/2016 Req'd Qty: 60.00 **\*60\*** Customer:

Reference:

Approvals: Process Plan: W Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start **\*NR1\***  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| Draw Nbr                       | Revision Nbr             |                      |         |        |              |               |               |                  |                |
| D2947                          | Rev A1                   |                      |         |        |              |               |               |                  |                |

105

0.00

**\*105\***

Purchasing

Purchasing

Memo

ISSUE PO 31797  
 CUT PER DRWG D2947 REV.A1

0.00

60

MAR 23 2016

DAS  
13  
9-89

115

Receive & Inspect for Damage & Mat'l Certs

0.00

**\*115\***

Packaging

Packaging

Memo

0.00

60x Sp16-04-7

125

DAS QC Inspect part completeness to step on W/O

0.00

**\*125\***

QC

Quality Control

38  
9-89

Memo

0.00

60

DAS  
38  
9-89

APR 08 2016

**P.T.O.**

**Work Order ID 142690**

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**\*142690\***

Page 2

Item ID: D2947

Accept

**\*N900040100\***

Setup

Start

**\*NS1\***

Revision ID:

Stop

**\*NS2\***

Item Name: Clamp

Start Date: 3/29/2016

Start Qty: 60.00

**\*60\***

Cust Item ID:

Required Date: 4/5/2016

Req'd Qty: 60.00

**\*60\***

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start

**\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop

**\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

130

Bend as per dwg  
Small Fab

0.00

**\*130\***

Brake NC

Memo

0.02

DAS  
30  
9-89

60

APR 19 2016

150

QC5- Inspect part completeness to step on W/O

0.00

**\*150\***

QC

Memo

0.02

Quality Control

60

DAS  
38  
9-89

APR 26 2016

160

Identify as per dwg &amp; Stock Location:

5154

0.00

**\*160\***

Packaging

Memo

0.01

Packaging

60 DAS  
8  
9-89

APR 29 2016

**Work Order ID 142690**

Monday, March 21, 2016 2:04:45 PM

**\*142690\***

Page 3

Item ID: D2947

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Clamp

Start Date: 3/29/2016 Start Qty: 60.00

**\*60\***

Cust Item ID:

Required Date: 4/5/2016 Req'd Qty: 60.00

**\*60\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

170

QC21- Final Inspection - Work Order Release

0.00

**\*170\***

QC

Memo

0.10

Quality Control

MCS MAY 02 2016

Lm 16/04/29

# Picklist Print

Monday, March 21, 2016 2:04:44 PM

Page 1

Work Order ID: 142690

**\*142690\***

Parent Item: D2947

**\*D2947\***

Parent Item Name: Clamp

Start Date: 3/29/2016

Required Date: 4/5/2016

Start Qty: 60.00

Required Qty: 60.00

Comments: IPP: A00.01.14New issueEC  
IPP Rev:B No longer made in house 07-06-11 JLM IPP REV:C  
11.08.08. MADE IN HOUSE DD VERF :EC

| Component Item ID/<br>Item Name | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status            |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|-------------------|
| D2947P                          |                        | Purchased     | No          |                     |                  |                 | Each               | 0.0000         |             | 60           |               |                |                   |
| <b>*D2947P*</b>                 |                        |               |             |                     |                  |                 |                    |                | <b>**</b>   |              |               |                |                   |
| Clamp                           |                        |               |             |                     |                  |                 |                    |                |             |              |               |                |                   |
| M304S16GA                       |                        | Purchased     | No          |                     |                  | 100             | sf                 | 115.4090       | 0.062       | 3.915792     |               | APR 01 2016    | DAS<br>13<br>9-89 |
| <b>*M304S16GA*</b>              |                        |               |             |                     |                  |                 |                    |                | <b>**</b>   |              |               |                |                   |
| 304/316 Sheet .063              |                        |               |             |                     |                  |                 |                    |                |             |              |               |                |                   |

Location

Loc Qty

Loc Code

MAT019

115.409

m134067

3.906

m134158

47.503

m134399

64

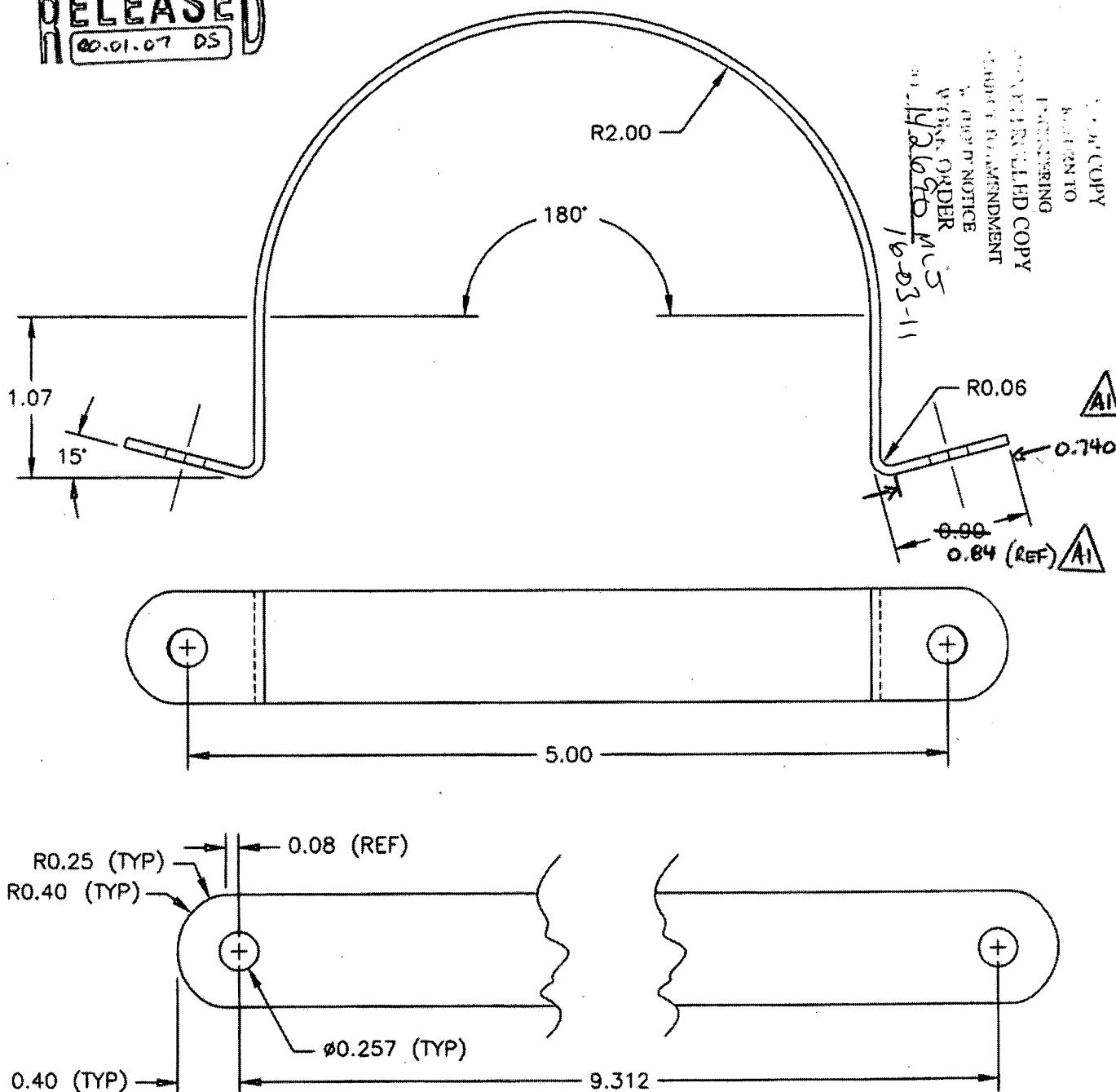
m134604





|                      |                       |                                                   |                        |
|----------------------|-----------------------|---------------------------------------------------|------------------------|
| DESIGN<br><i>th</i>  | DRAWN BY<br><i>CP</i> | DART AEROSPACE LTD<br>HAWKESBURY, ONTARIO, CANADA |                        |
| CHECKED<br><i>th</i> | APPROVED<br><i>th</i> | DRAWING NO.<br>D2947                              | REV. A<br>SHEET 1 OF 1 |
| DATE<br>00.01.06     |                       | TITLE<br>CLAMP                                    | SCALE<br>1:1           |
| A                    | 00.01.06              | NEW ISSUE                                         |                        |

RELEASED  
00.01.07 DS



D2947 FLAT PATTERN

MATERIAL: AISI 304/316 SS 0.063 THICK x 0.75 WIDE  
TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED  
ALL DIMENSIONS ARE IN INCHES

01.09.07 ADD 0.740 DIMENSION; 0.84 WAS 0.90  
A1



Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID PO31797

Purchase Order Date 3/23/2016

PO Print Date 3/23/2016

Page Number 2 of 7

Order From :  
TPI INDUSTRIES INC.  
148 RUE GOODFELLOW  
DELSON, QUEBEC J5B 1V4  
CANADA

VC-TPI001

Ship To : DART AEROSPACE LTD  
1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

Contact Name  
Vendor Phone 450-633-0484

Ship To Contact  
Ship To Phone  
Ship Via:  
Ship Acct:

Buyer  
Customer POID  
Customer Tax # 10127-2607  
Terms Net 30  
Currency CAD  
FOB Destination-Collect

|   |          |       |              |         |        |          |
|---|----------|-------|--------------|---------|--------|----------|
| 3 | D2947P ✓ | Clamp | 4/20/2016 FN | 90.00 ✓ | \$4.75 | \$427.50 |
|   |          |       | Yes          | Each    |        |          |
|   |          |       | 4/20/2016    |         |        |          |

CUT AS PER DWG D2947 REV. A  
B142690 X 60  
B142587 X 30  
MATERIAL 304 SHEET 16GA

*Sp16 04-07.*

Line Total: \$427.50

|   |            |         |           |       |        |          |
|---|------------|---------|-----------|-------|--------|----------|
| 4 | D3537-1P ✓ | Wearpad | 4/20/2016 | 40.00 | \$5.25 | \$210.00 |
|   |            |         | Yes       | Each  |        |          |
|   |            |         | 4/20/2016 |       |        |          |

CUT AS PER DWG D3537 REV. E  
B142912  
MATERIAL 304 SHEET 16GA

Line Total: \$210.00

|   |             |               |              |       |         |          |
|---|-------------|---------------|--------------|-------|---------|----------|
| 5 | D3564-11P ✓ | Wearplate Aft | 4/20/2016 FN | 10.00 | \$24.00 | \$240.00 |
|   |             |               | Yes          | Each  |         |          |
|   |             |               | 4/20/2016    |       |         |          |

CUT AS PER DWG D3564 REV. D  
B142836  
MATERIAL 304 SHEET 16GA

Note:

3/23/2016

**T.P.I. INDUSTRIES INC.**

148 GOODFELLOW  
DELSON, QUÉBEC J5B 1V4  
CANADA  
Tel: (450) 633-0484  
Fax: (450) 633-0879

**Packing Slip**

Packing Slip No.: 7442  
Date: 2016-04-05  
Page: 1

|                                                                                                   |                                                                                            |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <b>Sold to:</b>                                                                                   | <b>Ship to:</b>                                                                            |
| <b>Dart Aerospace</b><br>Chantal Lavoie<br>1270 Aberdeen<br>Hawkesbury, Ontario K6A 1K7<br>Canada | Dart Aerospace<br>Chantal Lavoie<br>1270 Aberdeen<br>Hawkesbury, Ontario K6A 1K7<br>Canada |
| <b>Order No.:</b> 31797                                                                           | <b>Sold By:</b> JONATHAN LESSARD                                                           |
| <b>Shipped By:</b>                                                                                | <b>Ship Date:</b> 2016-04-05                                                               |
| <b>Tracking No.:</b>                                                                              |                                                                                            |

| Item No.  | Unit   | Description              | Quantity |
|-----------|--------|--------------------------|----------|
| d2947     | Chaque | d2947 clamp              | 60       |
| d3537-1   | Chaque | d3537-1 wearpad          | 40       |
| d3564-11  | Chaque | d3564-11 wearplate       | 10       |
| d3564-5   | Chaque | d3564-5 wearplate        | 6        |
| d4095-041 | Chaque | d4095-041 wearplate assy | 8        |
| d4095-045 | Chaque | d4095-045 wearplate assy | 8        |
| d4095-047 | Chaque | d4095-047 wearplate assy | 4        |

**Comment:** Net / 30 from date of invoice 2% svc. chg. on invoices over 30 days



# THYSSENKRUPP MATERIALS NA

DART AEROSPACE

STAINLESS STEEL SHEET 304L-2B DUAL GRADE  
0600 Nom X 48.0000" X 96.0000"  
PART NO.

PO/Rel 31741

We certify that this is a true copy of the report  
furnished by the producer of the metal, or data  
resulting from tests made in approved labs.

## Certificate of Mill Test Results

BL PEC-983229-003

21Mar16

Pg 1/1

Signed by: 



### METALLURGICAL TEST REPORT

North American Stainless Canada Inc.  
740 Imperial Road North  
Guelph, ON N1K1Z3  
Canada

740 Imperial Road North

Certificate: 120157 1 Mail To:  
THYSSENKRUPP MATERIALS  
Customer: 007206 001 2821 LANGSTAFF ROAD  
CONCORD, ON L4K5C6

Ship To:  
THYSSENKRUPP MATERIALS  
2821 LANGSTAFF ROAD  
CONCORD, ON L4K5C6

Date: 12/03/2015 Page: 1

Steel: 304/304L

Finish: 2B

Corrosion: ASTM A262/14,18OBend-OK

Your Order: PEC271093

NAS Order: WN 0072789 03

#### PRODUCT DESCRIPTION:

STAINLESS STEEL COIL, C.R. ANNEALED & PICKLED, UNS 30400/30403  
ASTM A240/15a,A480/14b,A666/15,ASME SA240/13,SA480/13,SA666/13  
CHEM ONLY ON FOLLOWING ASTM: A276/13,A479/13a,A484/13a,A312/13  
CHEM ONLY ON FOLLOWING ASME: SA312/13,SA479/13  
AMS 5511H/5513J XMRK; MIL-5059D AMD3(X CRN MEAS); MIL-4043B  
NACE MR0175/ISO 15156-3:2009 A, MR0103/07,QQ8766D-A X MAG PERM  
MIN. SOLUTION ANNEAL TEMP 1900F, WATER QUENCHED

#### REMARKS:

Mat'l is Free of Mercury Contamination. No weld repairs.  
EN 10204:2004 3.1; RoHS 1 & 2 Compliant  
Material is Free of Radioactive Contamination  
Steel Making Process: EAF, AOD, & Cont. Casting  
Product Mfg.by a Quality Mgt.Sys. in Conf. w/ISO 9001  
\*Melted & Manufactured in the USA; Mat'l is DFARS Compliant

| Product Id | Coil #   | Skid # | Thickness | Width   | Weight       | -----Length----- | Mark | Pieces | Commodity Code |
|------------|----------|--------|-----------|---------|--------------|------------------|------|--------|----------------|
| 05X1X2 CA  | 05X1X2 C |        | .0575     | 48.0000 | 4.950 SHEETS | 096.00           |      | 64     |                |

#### CHEMICAL ANALYSIS

Lab Accreditation Bureau, ISO/IEC 17025, Certificate# L2323  
CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan) Chemical Analysis per ASTM A751/08

| HEAT | CM | C %   | CR %    | CU %  | MN %   | MO %  | N %   | NI %   | P %   | S %   |
|------|----|-------|---------|-------|--------|-------|-------|--------|-------|-------|
| X1X2 | US | .0216 | 18.2925 | .3910 | 1.7545 | .5130 | .0897 | 8.0095 | .0275 | .0031 |

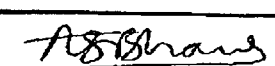
SI %

.2670

#### MECHANICAL PROPERTIES

| Product Id# | Coil #   | 1 d<br>o i<br>c r | UTS<br>KSI | 20C .2% YS<br>KSI | 20C ELONG<br>%-2" | % Hard<br>RB | Tail<br>Hard |
|-------------|----------|-------------------|------------|-------------------|-------------------|--------------|--------------|
| 05X1X2 CA   | 05X1X2 C | F T               | 97.24      | 49.89             | 47.19             | 87.00        | 85.00        |

NAS hereby certifies that the analysis on this certification is correct. Based upon the results and the accuracy of the test methods used, the material meets the specifications stated. These results relate only to the items tested and this report cannot be reproduced, except in its entirety, without the written approval of NAS.

Technical  
Dept. Mgr. 

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



### WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only

|                                                                                                                       |  |                                                |  |                                                          |  |                                                            |  |                                                |  |                                                        |  |
|-----------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------|--|----------------------------------------------------------|--|------------------------------------------------------------|--|------------------------------------------------|--|--------------------------------------------------------|--|
| Work Order: _____                                                                                                     |  | DISPOSITION                                    |  | AGAINST DEPARTMENT/PROCESS                               |  |                                                            |  |                                                |  |                                                        |  |
| Part No. _____                                                                                                        |  | Rework <input checked="" type="checkbox"/>     |  | Skid-tube <input type="checkbox"/>                       |  | Cross tube <input type="checkbox"/>                        |  | Water Jet <input type="checkbox"/>             |  | Engineering <input type="checkbox"/>                   |  |
| NCR No. _____                                                                                                         |  | Scrap <input type="checkbox"/>                 |  | Machining <input type="checkbox"/>                       |  | Small Fab <input type="checkbox"/>                         |  | Prod. Eng. Coord. <input type="checkbox"/>     |  | Quality <input type="checkbox"/>                       |  |
|                                                                                                                       |  | Use-as-is <input type="checkbox"/>             |  | Thermoforming <input type="checkbox"/>                   |  | Finishing <input type="checkbox"/>                         |  | Rec/Store/Packaging <input type="checkbox"/>   |  | Other <input type="checkbox"/>                         |  |
|                                                                                                                       |  | Suspected Unapproved <input type="checkbox"/>  |  | Large Fab <input type="checkbox"/>                       |  | Composite <input type="checkbox"/>                         |  | Supplier <input checked="" type="checkbox"/>   |  |                                                        |  |
| Date : 16-04-04                                                                                                       |  | Step #: 105                                    |  | QTY Effective :                                          |  |                                                            |  | MRB (QS1042) Approval                          |  |                                                        |  |
| Description Work Order Deviation                                                                                      |  |                                                |  | Disposition                                              |  |                                                            |  | Completed By                                   |  |                                                        |  |
| Part was outsource to T.P.I. on PO377767. 31797. At inspection some holes where found under size. Ref. to NCR 16-5694 |  |                                                |  | The work (drill) holes to drawing. Fill out F.A.I. sheet |  |                                                            |  |                                                |  |                                                        |  |
|                                                                                                                       |  |                                                |  |                                                          |  |                                                            |  | Lead hand / Supervisor Approval Verification   |  |                                                        |  |
|                                                                                                                       |  |                                                |  |                                                          |  |                                                            |  | QC / QA Coordinator Approval                   |  |                                                        |  |
| Root Cause                                                                                                            |  |                                                |  | FAULT CATEGORY                                           |  |                                                            |  |                                                |  |                                                        |  |
| Environment <input type="checkbox"/>                                                                                  |  | No Re-verification <input type="checkbox"/>    |  | Pressure/Forced <input type="checkbox"/>                 |  | Temperature/Cure <input type="checkbox"/>                  |  | Power Loss/Surge <input type="checkbox"/>      |  | Positioned Wrong <input type="checkbox"/>              |  |
| Design <input type="checkbox"/>                                                                                       |  | Operator <input type="checkbox"/>              |  | Bending <input type="checkbox"/>                         |  | Set-up <input type="checkbox"/>                            |  | Folio/Program <input type="checkbox"/>         |  | Outside Dimensions <input checked="" type="checkbox"/> |  |
| Doc/Data <input type="checkbox"/>                                                                                     |  | Offset/Setup <input type="checkbox"/>          |  | Centre Not Concentric <input type="checkbox"/>           |  | BOM/Route <input type="checkbox"/>                         |  | Grain <input type="checkbox"/>                 |  | Over/Under tolerance <input type="checkbox"/>          |  |
| Equip/Tooling <input type="checkbox"/>                                                                                |  | Supplier <input checked="" type="checkbox"/>   |  | Cracks <input type="checkbox"/>                          |  | Broken/Damage/Defect <input type="checkbox"/>              |  | Weld <input type="checkbox"/>                  |  | Part Incorrect <input type="checkbox"/>                |  |
| Handling/Pre <input type="checkbox"/>                                                                                 |  | Training <input type="checkbox"/>              |  | Crimp/Kink/Ripple/Wave <input type="checkbox"/>          |  | Inspection Incomplete/Unqualified <input type="checkbox"/> |  | Wrong Stock Pulled <input type="checkbox"/>    |  | Part Lost/Missing <input type="checkbox"/>             |  |
| Material <input type="checkbox"/>                                                                                     |  | Use for Testing <input type="checkbox"/>       |  | Cuffs <input type="checkbox"/>                           |  | Contamination <input type="checkbox"/>                     |  | Out of Sequence <input type="checkbox"/>       |  | Part Moved <input type="checkbox"/>                    |  |
| Internal Transport <input type="checkbox"/>                                                                           |  | Poor Information <input type="checkbox"/>      |  | Crushing <input type="checkbox"/>                        |  | Countersink <input type="checkbox"/>                       |  | Off-set <input type="checkbox"/>               |  | Drawing <input type="checkbox"/>                       |  |
| Tribal Knowledge <input type="checkbox"/>                                                                             |  | Rushing <input type="checkbox"/>               |  | Heat Treat <input type="checkbox"/>                      |  | Cut Too Short <input type="checkbox"/>                     |  | Mislabeled <input type="checkbox"/>            |  | Finish <input type="checkbox"/>                        |  |
| LOA <input type="checkbox"/>                                                                                          |  | Product Improvement <input type="checkbox"/>   |  | Wave/Twist in Tube <input type="checkbox"/>              |  | Instructions Incomplete/Unclear <input type="checkbox"/>   |  | Fit/Function <input type="checkbox"/>          |  | Misread <input type="checkbox"/>                       |  |
| Substation <input type="checkbox"/>                                                                                   |  | Process Improvement <input type="checkbox"/>   |  | Marks/Chatter <input type="checkbox"/>                   |  | Drill Holes <input type="checkbox"/>                       |  | Misaligned/off center <input type="checkbox"/> |  | Turning Sequence <input type="checkbox"/>              |  |
| Past Expiry Date <input type="checkbox"/>                                                                             |  | Manufacturing Process <input type="checkbox"/> |  |                                                          |  |                                                            |  |                                                |  |                                                        |  |
| Misidentified <input type="checkbox"/>                                                                                |  | Past Due <input type="checkbox"/>              |  | OTHER :                                                  |  |                                                            |  |                                                |  |                                                        |  |